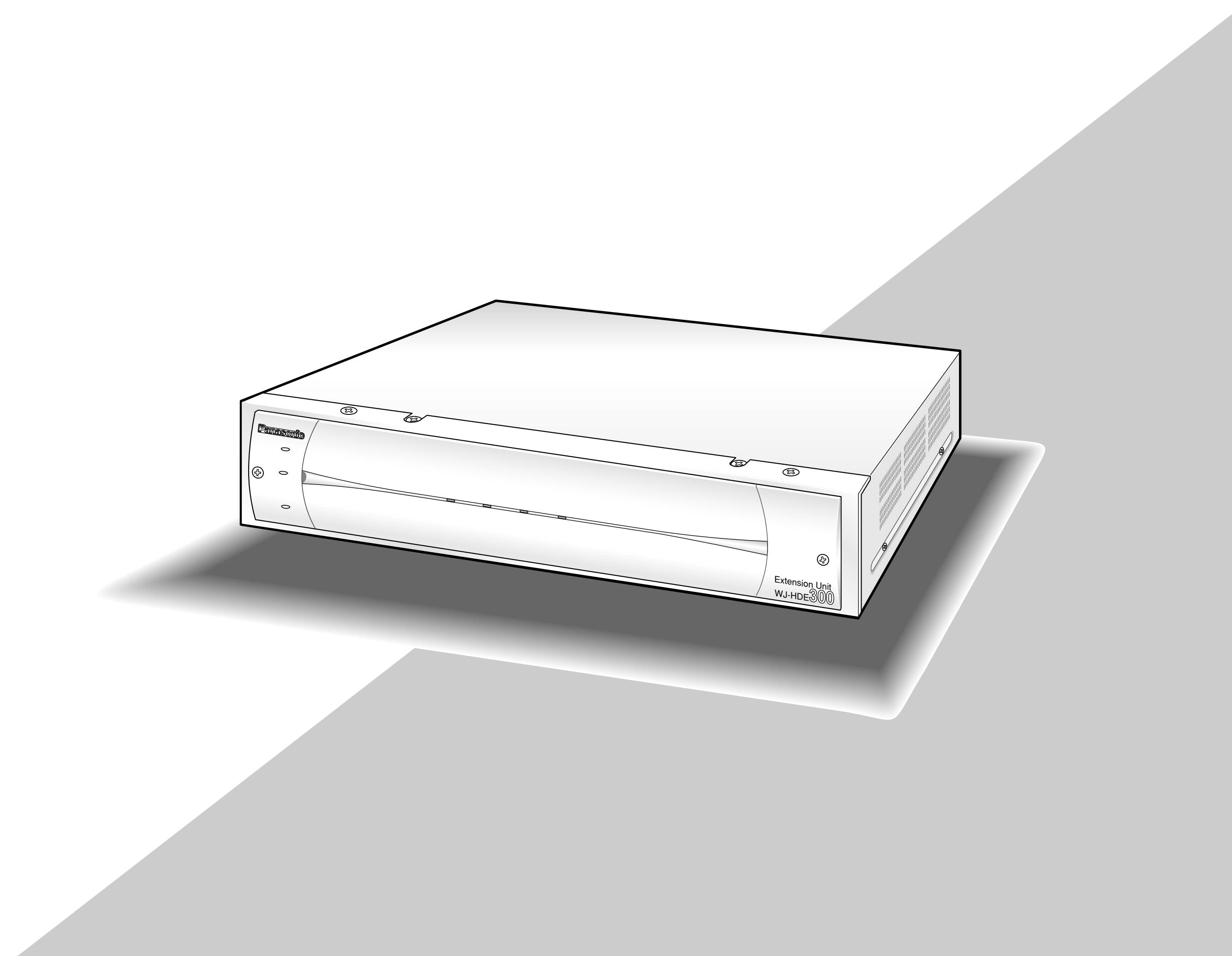
Panasonic

Extension Unit
Instructions

Model No. WJ-HDE300/G



Before attempting to connect or operate this product,
please read these instructions carefully and save this manual for future use.

The model number is abbreviated in some descriptions in this manual.

We declare under our sole responsibility that the product to which this declaration relates is in conformity with the standards or other normative documents following the provisions of Directives 2006/95/EC and 2004/108/EC.

Wir erklären in alleiniger Verantwortung, daß das Produkt, auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt. Gemäß den Bestimmungen der Richtlinie 2006/95/EC und 2004/108/EC.

Nous déclarons sous notre propre responsabilité que le produit auquel se réfère la présente déclaration est conforme aux normes spécifiées ou à tout autre document normatif conformément aux dispositions des directives 2006/95/CE et 2004/108/CE.

Nosotros declaramos bajo nuestra única responsabilidad que el producto a que hace referencia esta declaración está conforme con las normas u otros documentos normativos siguiendo las estipulaciones de las directivas 2006/95/CE y 2004/108/CE.

Noi dichiariamo sotto nostra esclusiva responsabilità che il prodotto a cui si riferisce la presente dichiarazione risulta conforme ai seguenti standard o altri documenti normativi conformi alle disposizioni delle direttive 2006/95/CE e 2004/108/CE.

Wij verklaren als enige aansprakelijke, dat het product waarop deze verklaring betrekking heeft, voldoet aan de volgende normen of andere normatieve documenten, overeenkomstig de bepalingen van Richtlijnen 2006/95/EC en 2004/108/EC.

Vi erklærer os eneansvarlige for, at dette produkt, som denne deklaration omhandler, er i overensstemmelse med standarder eller andre normative dokumenter i følge bestemmelserne i direktivene 2006/95/EC og 2004/108/EC.

Vi deklarerar härmed vårt fulla ansvar för att den produkt till vilken denna deklaration hänvisar är i överensstämmelse med de standarder eller andra normativa dokument som framställs i direktiv nr 2006/95/EC och 2004/108/EC.

Ilmoitamme yksinomaisella vastuullamme, että tuote, jota tämä ilmoitus koskee, noudattaa seuraavia standardeja tai muita ohjeellisia asiakirjoja, jotka noudattavat direktiivien 2006/95/EC ja 2004/108/EC säädöksiä.

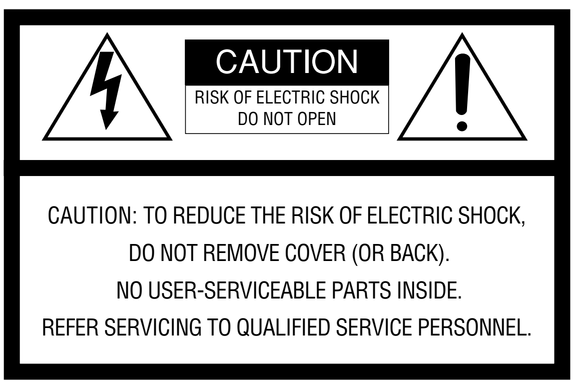
Vi erklærer oss alene ansvarlige for at produktet som denne erklæringen gjelder for, er i overensstemmelse med følgende normer eller andre normgivende dokumenter som følger bestemmelsene i direktivene 2006/95/EC og 2004/108/EC.

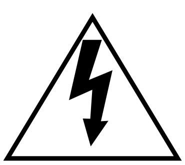
WARNING:

- To prevent fire or electric shock hazard, do not expose this appliance to rain or moisture. The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.
- All work related to the installation of this product should be made by qualified service personnel or system installers.
- For PERMANENTLY CONNECTED APPARATUS provided neither with an all-pole MAINS SWITCH nor an all-pole circuit breaker, the installation shall be carried out in accordance with all applicable installation rules.

CAUTION:

- Read the label on the rear of the unit for identification of this product, and the power ratings.





The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Power disconnection. Unit with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON-OFF switch is in the ON position. The power cord is the main power disconnect for all units.

For U.K.

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 5 amp fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amp and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark or the BSI mark on the body of the fuse.
If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.
If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.
WARNING: This apparatus must be earthed.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code.

Green-and-yellow:	Earth
Blue:	Neutral
Brown:	Live

As the colours of the wire in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

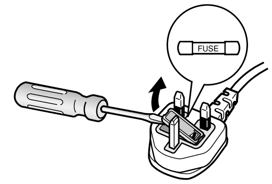
The wire which is coloured **green-and-yellow** must be connected to the terminal in the plug which is marked with the letter **E** or by the earth symbol ⏚ or coloured **green** or **green-and-yellow**.

The wire which is coloured blue must be connected to the terminal in the plug which is marked with the letter **N** or coloured **black**.

The wire which is coloured **brown** must be connected to the terminal in the plug which is marked with the letter **L** or coloured **red**.

How to replace the fuse

Open the fuse compartment with a screwdriver and replace the fuse and fuse cover.



The serial number of this product may be found on the rear of the unit.
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. WJ-HDE300

Serial No. ______________________

Important Safety Instructions

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Do not use this apparatus near water.

6) Clean only with dry cloth.

7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8) Do not use near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the points where they exit from the apparatus.

11) Only use attachments/accessories specified by the manufacturer.

12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-overs.



S3125A

13) Unplug this apparatus during lightning storms or when unused for long periods of time.

14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Contents

■ General

The extension unit WJ-HDE300 can accommodate up to four hard disk drives per unit to add available disk space to the digital disk recorder WJ-HD316A/WJ-HD309A series. Up to seven extension units can be connected to a digital disk recorder. The units can be operated in RAID level 5* mode for high tolerance to disk error.

* **RAID level 5 (Redundant Arrays for Independent Disks, independent data disks with distributed parity blocks)**
RAID level 5 regards 3 or more drives as one drive, and it is possible to read data by automatically attaching error correction data even though one of the drives is broken. (It is impossible to read data if 2 or more drives are broken.)
RAID level 5 requires a minimum of 3 drives per unit.
When using the RAID function, the logical disk size of the extension unit will be as below.
Logical disk size = Smallest size of the disk among the disks in the extension unit x (Number of the disks in the extension unit - 1) The actual space may be several percent lower than the logical space.
Even when the total capacity of HDD mounted on each extension unit is more than 2 TB, the capacity that is actually available will be 2 TB or less.

* **Important**
When set to RAID level 5, the digital disk recorder will not access the HDD preinstalled in it, but will access only the HDDs in the extension unit.

■ Precautions

- Do not operate the appliance beyond its specified temperature, humidity or power source ratings.
  Do not use the appliance in an extreme environment where a high temperature or high humidity exists. Use the appliance at temperatures within +5 °C to +45 °C (41 °F to 113 °F) and humidity below 85 %.
  The input power source for this appliance is 220 V AC – 240 V AC 50 Hz.

- Avoid shock and vibration
  Shock or vibration may damage the HDD.
  The HDDs are fragile especially when the HDD motors are revolving and the HDD POWER indicator lights. Be sure to turn off either switch: the POWER switch on the rear panel, or the HDD POWER switch inside the front lid: before you mount the unit into a rack or dismount it.
  Do not move the HDD for 30 seconds after turning off the power.

- Pay attention to static electricity
  Put your hand on a metallic surface to discharge static electricity before installation.
  Do not touch components mounted on the HDD directly with your hand.
  Hold only the two sides of the HDD when installing.

- Avoid condensation on the surface of the HDD.
  If this happens, do not turn on the power of the appliance and leave the appliance for around 2 hours.
  Wait until the dew evaporates in any of the following cases.
  - The appliance is moved to a place significantly different in temperature or humidity.
  - The appliance is moved out from an air-conditioned room.
  - The appliance is placed in an extremely humid place.
  - The appliance is placed in a room where a heater has just been turned on.

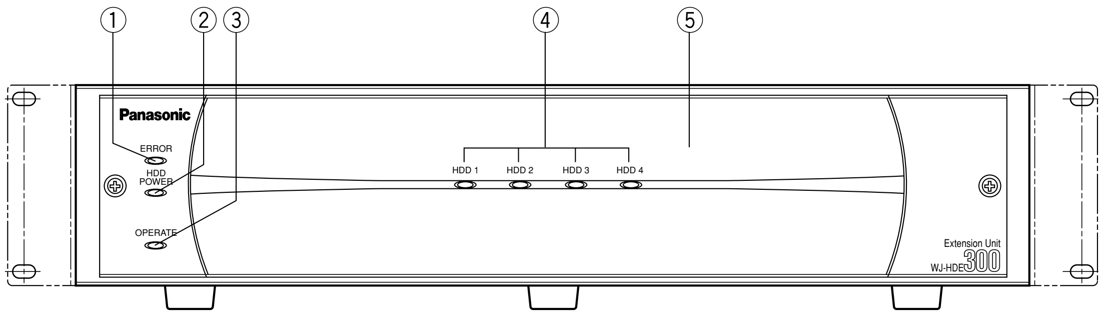
- Consumable parts
  Contact your dealer about replacement when the time comes.
  A hard disk drive needs replacing after a certain length (depends on the model) of operation.
  Cooling fans also need replacing after around 20 000 - 30 000 hours of operation.

- Do not block the ventilation opening or slots on the cover.
  To prevent the appliance from overheating, place it at least 5 cm (2 inches) away from the wall.

- Avoid placing the unit on an inclined surface. Otherwise, malfunction or damage to the disk may occur. Place the unit in a horizontal position.

■ Appearance

● Front View



① **Error indicator [ERROR]**
Lights when an error occurs. Refer to Troubleshooting for details.
Red: System error
Orange: Thermal error or malfunction of the cooling fan.

② **HDD power indicator [HDD POWER]**
ON: Indicates that the HDDs are powered.
OFF: Indicates that the HDDs are not powered.
Notes:
- Do not move or shock the unit while this indicator is lit. Otherwise, the HDDs will be damaged.
- This indicator will light and go out by the setting of the HDD POWER switch inside the front lid of the unit, or by the operation on the HDD SAFETY MENU of the digital disk recorder.

③ **Operate indicator [OPERATE]**
Lights green when turning on the power switch on the rear panel.

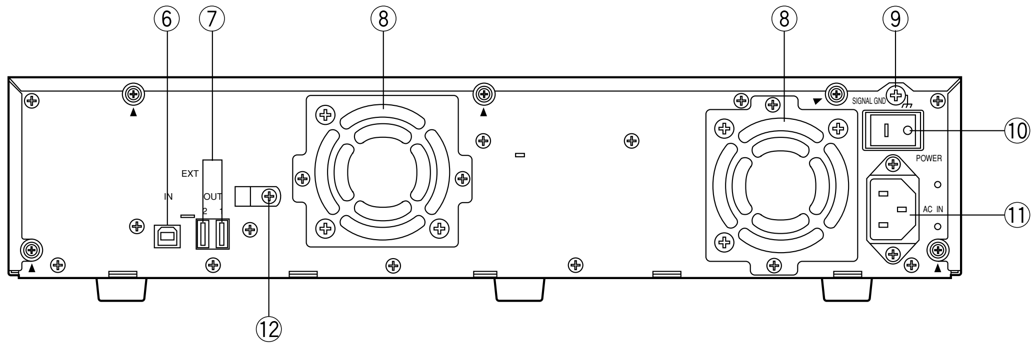
④ **HDD access indicators [HDD 1] [HDD 2] [HDD 3] [HDD 4]**
Each indicator lights to indicate the status of the respective HDD.
Green: Indicates that the respective HDD is running normally.
Red: Indicates that the respective HDD is the first faulty drive among the HDDs in the unit.
Red blink: Indicates that the respective HDD is the second or subsequent faulty drive among the HDDs in the unit.
Orange-red alternate blink/Orange: Indicates that the respective drive is currently being recovered in RAID level 5 mode.

These indicators normally show the status of the respective drive, but they work as a set when a system error occurs. Refer to Troubleshooting for further information.

Important
When one of the indicators lights red, replace the respective HDD immediately. If two or more indicators light/blink red, it will be impossible to recover data. There may be cases where it is eventually impossible to recover data if two drives are coincidentally damaged or the second drive fails during the data recovery process.

⑤ **Front cover**
Detach the front cover when it is necessary to install HDDs or to operate the switches inside the unit.

● Rear View



⑥ **Serial in connector [IN]**
Connect the WJ-HD300 series digital disk recorder or other extension unit with the supplied serial cable.

⑦ **Serial out connector [OUT1] [OUT2]**
Connect another extension unit with the supplied serial cable.

⑧ **Cooling fan**

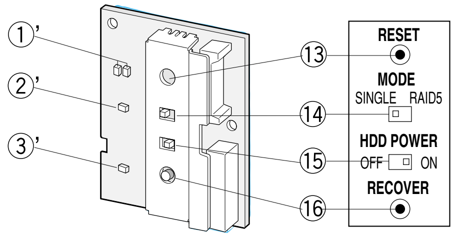
⑨ **Signal GND terminal [SIGNAL GND]**
Connect this terminal if required, to the SIGNAL GND terminal of other equipment to avoid a possible grounding loop and noise.

⑩ **Power switch [POWER]**
Turn on the power of the unit with this switch before turning on the power of the digital disk recorder, or turn them on simultaneously. Otherwise, the HDDs will not be mounted.
When turning off the power of the unit with this switch, turn off the power of the digital disk recorder first, and then turn off the power of this unit after confirming that all HDD access indicators are not lit or blinking.

⑪ **AC inlet [AC IN]**
Connect the supplied power cord.

⑫ **Cable clamp**

● Inside the Front Lid



①' **Error indicators**
Functions the same as on the front panel.
Red: System error
Orange: Thermal error or malfunction of the cooling fan.

②' **HDD power indicator**
Functions the same as on the front panel.
ON: Indicates that HDDs are powered.
OFF: Indicates that the HDDs are not powered.

③' **Operate indicator**
Functions the same as on the front panel.
Lights green when turning on the power switch on the rear panel.

⑬ **Reset button [RESET]**
This button is located inside the unit. To access this button, it is necessary to detach the front cover. Press this button using a small screw driver (not supplied).

- When SINGLE is selected
After adding or replacing any of the HDDs, press this button. Refer to Setup Procedures for details.

- When RAID 5 is selected
This button is used in combination with the RECOVER button and MODE switch after adding or replacing any of the HDDs. Refer to Setup Procedures for details.

Important
Do not press the RESET button and the RECOVER button simultaneously when SINGLE is selected. Otherwise, the setting of the digital disk recorder may be initialized and it may cause a malfunction.

⑭ **Mode switch [MODE]**
RAID 5: Applies RAID level 5 mode (striping at the byte level also stripe error correction information).
SINGLE: Applies SINGLE mode (no striping across drives for data or error correction information). **Default position**

Important
- Changing the MODE switch will not be accepted when the ERROR indicator lights red and/or when HDD 1-4 indicate a system error status by lighting red and orange. When this happens, ask your dealer to solve the error.
- When set to RAID5, the HDD preinstalled in the digital disk recorder will not work. Instead, it is applied only to the HDDs installed in the extension unit and the digital disk recorder will perform storage and readout of the image data by accessing the extension unit.
- The MODE switches of all extension units in a system should be set to the same position, SINGLE or RAID5. Otherwise, the system will malfunction.
- The available disk space of the unit can be logically calculated as follows. The actual space may be several percent lower than you calculated depending on the HDD type used and their combination. The most efficient way is to use the same type drives.
When SINGLE is selected, it will be the sum of all the HDD sizes.
When RAID 5 is selected, it will be as follows.
When 3 HDDs are in the unit: It will be double the size of the smallest HDD size.
When 4 HDDs are in the unit: It will be triple the size of the smallest HDD size.

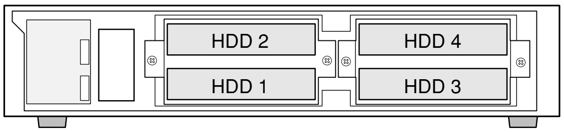
For example, if 4 HDDs of 80 GB, 120 GB, and two 160 GB are mounted, the available disk space will be 80 G x 3 = 240 GB.

⑮ **HDD power switch [HDD POWER]**
Use this switch in the ON position for normal operation.
ON: Supplies the power to the HDDs and the HDD power indicators will light. **Default position**
OFF: Does not supply the power and the HDD power indicators will go out.

⑯ **Recover button [RECOVER]**
Use this button with the RESET button after replacing the HDDs used in the RAID 5 mode to start data recovery.
Refer to page 12 for details.

■ Replacing/Mounting HDDs

Up to four HDDs (locally procured) can be installed in an extension unit.



Important

- Type of hard disk drive
  Consult your dealer about hard disk drives. Use only hard disk drives compatible with the extension unit. If unauthorized hard disk drives are used, it may cause a system error.
  It is recommended that the same type drives having the same capacity should be installed in the extension units to maximize the usable capacity.

- The HDDs should be installed in the proper positions in the order as shown above. Do not skip or reverse the order of the HDD positions. Otherwise, the recorder will not recognize the extension unit or wrongly mounted drives.

- The MODE switches of all units in a system should be set to the same position, SINGLE or RAID5. When mixed, it will cause a system error. See Troubleshooting for details.

- When applying the RAID5 mode, it requires a minimum of 3 drives per unit. When only two drives are mounted in position #1 and #2, the ERROR indicator will be lit red, HDD3 indicator will blink red, and HDD4 indicator will be lit red.

- When applying the RAID5 mode, the digital disk recorder will not access the HDD preinstalled in it, but will access only the HDDs in the extension unit.

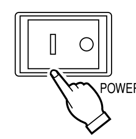
- Do not change the installed positions after the system has been operated. Otherwise, data readout will not be performed

- The replaced/added HDDs will be formatted.
  SINGLE mode: Only the replaced/added HDD will be formatted. For example, when the HDD 4 of the extension unit 2 is replaced, only the HDD4 of the extension unit 2 will be formatted.
  RAID 5 mode: All the HDDs of the extension units will be formatted when a new HDD is added or a preinstalled HDD is removed. For example, when the HDD 4 of the extension unit 2 is added, all the HDDs of the extension unit 2 will be formatted.

● Procedures

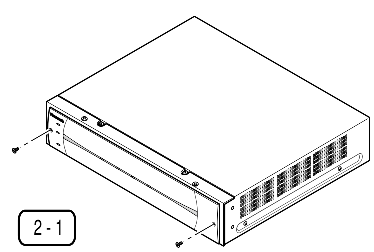
1. HDD power-off procedures
Perform either of the following procedures depending on the installation situations to stop the HDD motors.

Case 1: When the rear of the units is **accessible**, turn off the power switches of the digital disk recorder first, and turn off extension units.



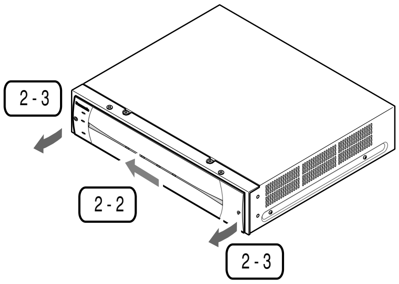
Case 2: When the rear of the units is **inaccessible**, for example when mounted in a rack, open the SETUP MENU of the digital disk recorder and set the **HDD SAFETY MODE** to ON. The extension units will turn to the HDD power-off mode.
Refer to Setup Procedures of this manual and the Operating Instructions included with the digital disk recorder for details .

2. Detach the front cover and the front panel.

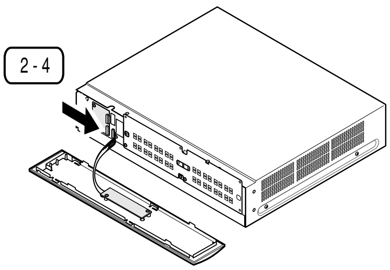


2-1 Remove the two screws.

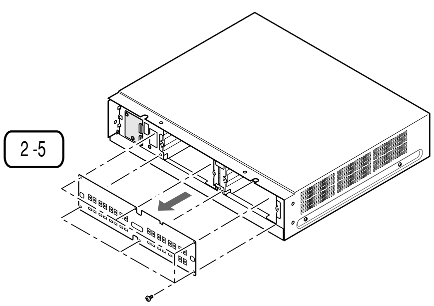
2-2 Slide the front cover to the left.
2-3 Pull the front cover toward you.



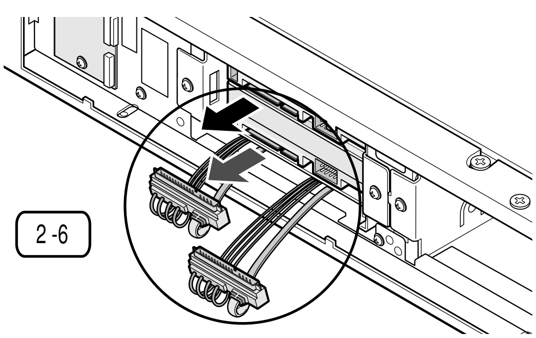
2-4 Disconnect the harness.



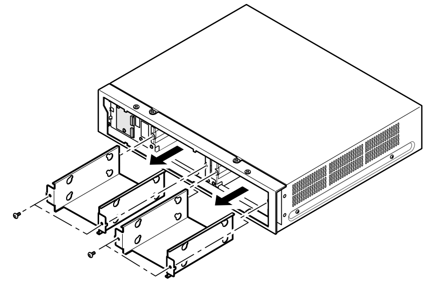
2-5 Remove the six screws (marked with Δ) and detach the thin metal plate covering the front side.



2-6 Disconnect the connectors when adding or replacing the HDDs.



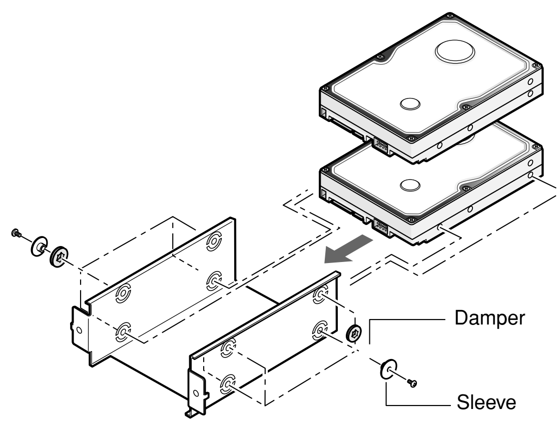
3. Remove two of the HDD mounting brackets.
- Remove the four screws and pull the brackets toward you.



- When replacing an HDD, remove it from the bracket.

4. Prepare the HDDs to be fixed on the brackets.
- Release the static electricity from your body before touching the HDDs.
- Put the conductive bag (in which the HDD was packed) on a soft surface and place the HDD on it with the circuit board side down.

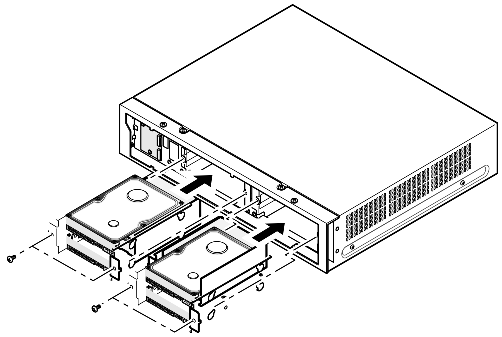
5. Fix the HDDs on the brackets.
5-1 Slide the HDD onto the bracket.
5-2 Tighten the screws with the dampers and the sleeves (supplied four pieces each) to fix the HDD on the bracket.



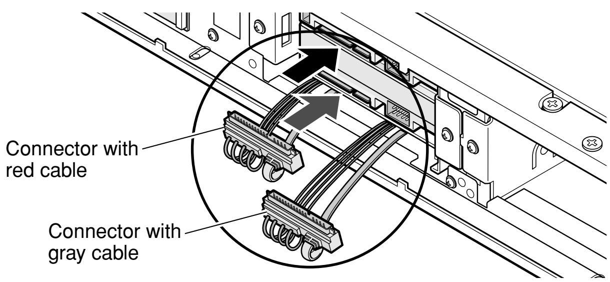
6. Repeat step 5 to fix all the HDDs on the bracket.
- Do not use an electric screwdriver to fix them.
  Recommended tightening torque = 0.49 N·m {5 kgf·cm}

7. Place the brackets with the fixed HDDs into the unit and fix them using the four screws removed in step 3.

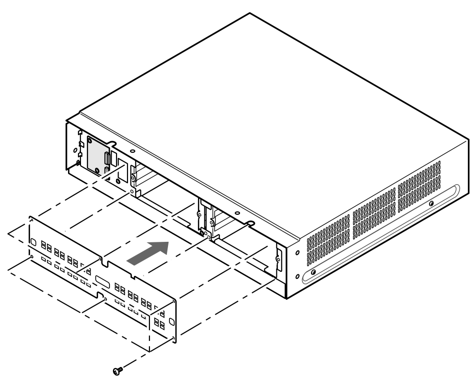
- Do not use an electric screwdriver to fix them. Recommended tightening torque = 0.784 N·m {8 kgf·cm}



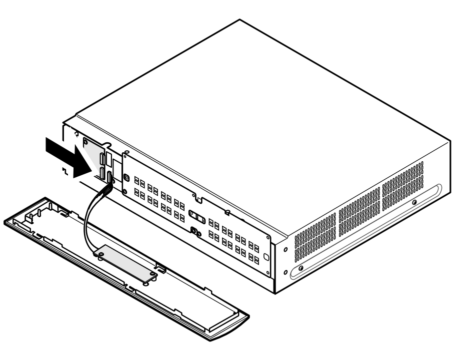
8. Connect the connector with gray cable to the upper HDD and the connector with red cable to the lower.



9. Attach the metal plate removed in step 2 with the six screws (marked with Δ) previously removed.



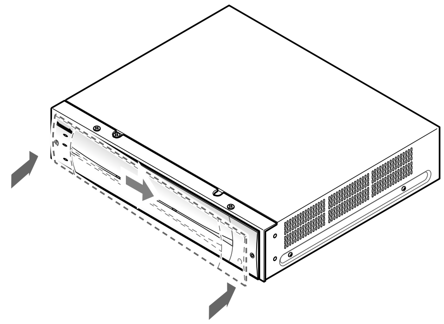
10. Connect the detached harness as it was.



11. Attach the front cover as it was.

11-1 Align the left edges of both the front cover and the unit, and then push the front cover onto the unit.

11-2 Slide the front cover to the right.



Note: The front cover may be attached and detached as necessary in the next step of Setup Procedures. Be careful not to damage the harness.

12. Mount the unit referring to Mounting in a Rack.

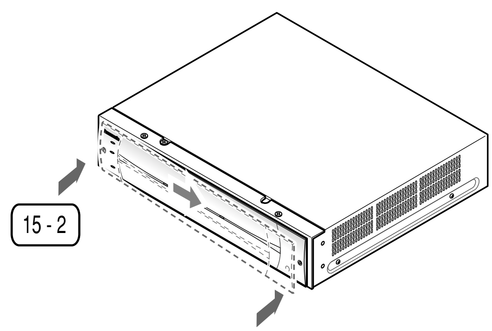
13. Connect the unit referring to Connections.

14. Set up the unit referring to Setup Procedures.

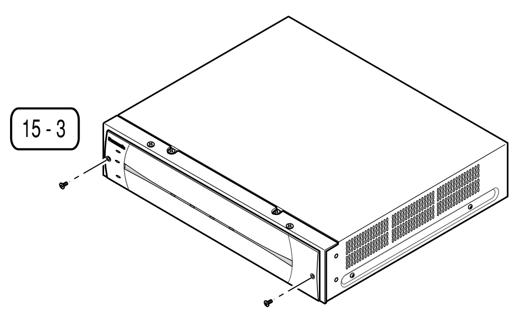
15. Attach the front cover as it was.

15-1 Align the left edges of both the front cover and the unit, and then push the front cover onto the unit.

15-2 Slide the front cover to the right.



15-3 Tighten the two screws.

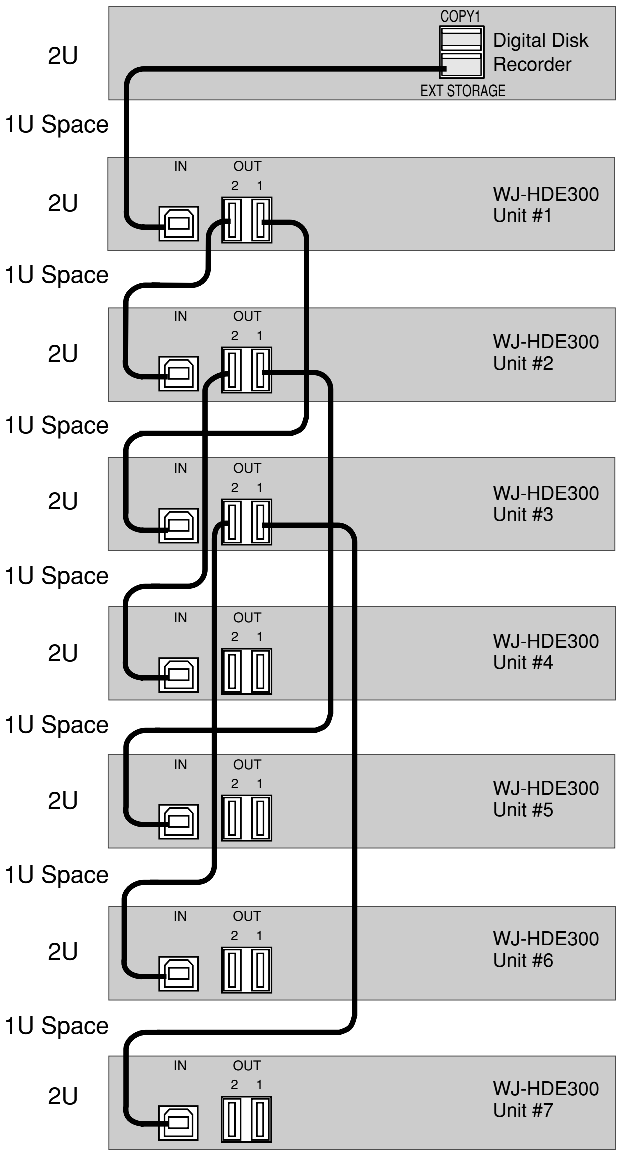


■ Mounting in a Rack

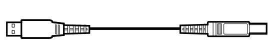
● Unit Layout

Notes:
- Be sure to make a space of 1 U (44 mm) between the units for ventilation in a rack.
- Refer to "● Unit Number Check" when you need to confirm the unit numbers.

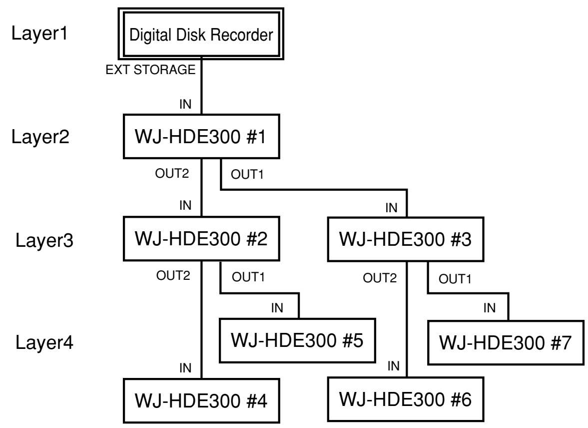
Unit Layout & Wiring



Serial cable (1 m, supplied)



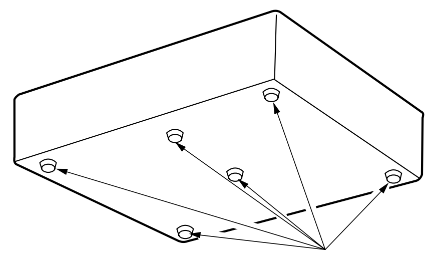
Connection Diagram



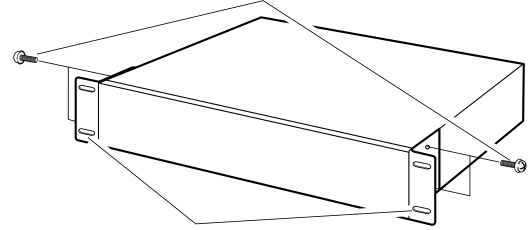
● How to Mount

1. Turn off the power of the unit and detach the plug from the outlet.
When not turning off the power, open the front cover and turn off the HDD POWER switch.

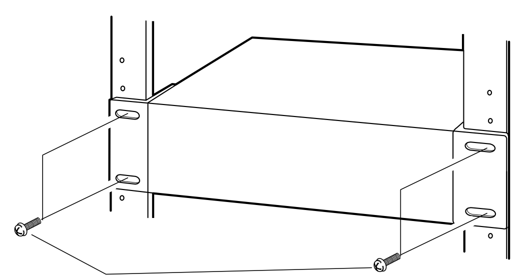
2. Remove the six rubber feet by removing the six screws from the bottom of the unit



3. Fix the Rack Mounting Brackets (supplied) on both sides of the unit with the four screws (M4X10, supplied).



4. Install the unit in the rack securing it with four screws (M5x12, not supplied).



5. Turn on the power of the unit.
When the HDD POWER switch is turned off, turn it on and attach the front cover as it was.

Cautions:

- Make a space of 1U (44 mm) between the units for ventilation, and install them in the rack as low as possible.
- Keep the temperature in a rack below 45 °C (113 °F).
- Install a fan in the rack when the ambient temperature is above 30 °C (86 °F).
- Do not block the ventilation openings or slots on the cover to prevent the unit from overheating.

■ Connections

You can connect up to seven extension units with the digital disk recorder (the WJ-HD316A/WJ-HD309A series) as shown below using the supplied serial cables.

● Procedures

1. Connect the EXT STORAGE port of the recorder and the IN port of extension unit #1 using the supplied serial cable.

2. Connect the OUT port of unit #1 and the IN port of unit #2 using the supplied serial cable.

3. Repeat connections in the same way for the remaining units.

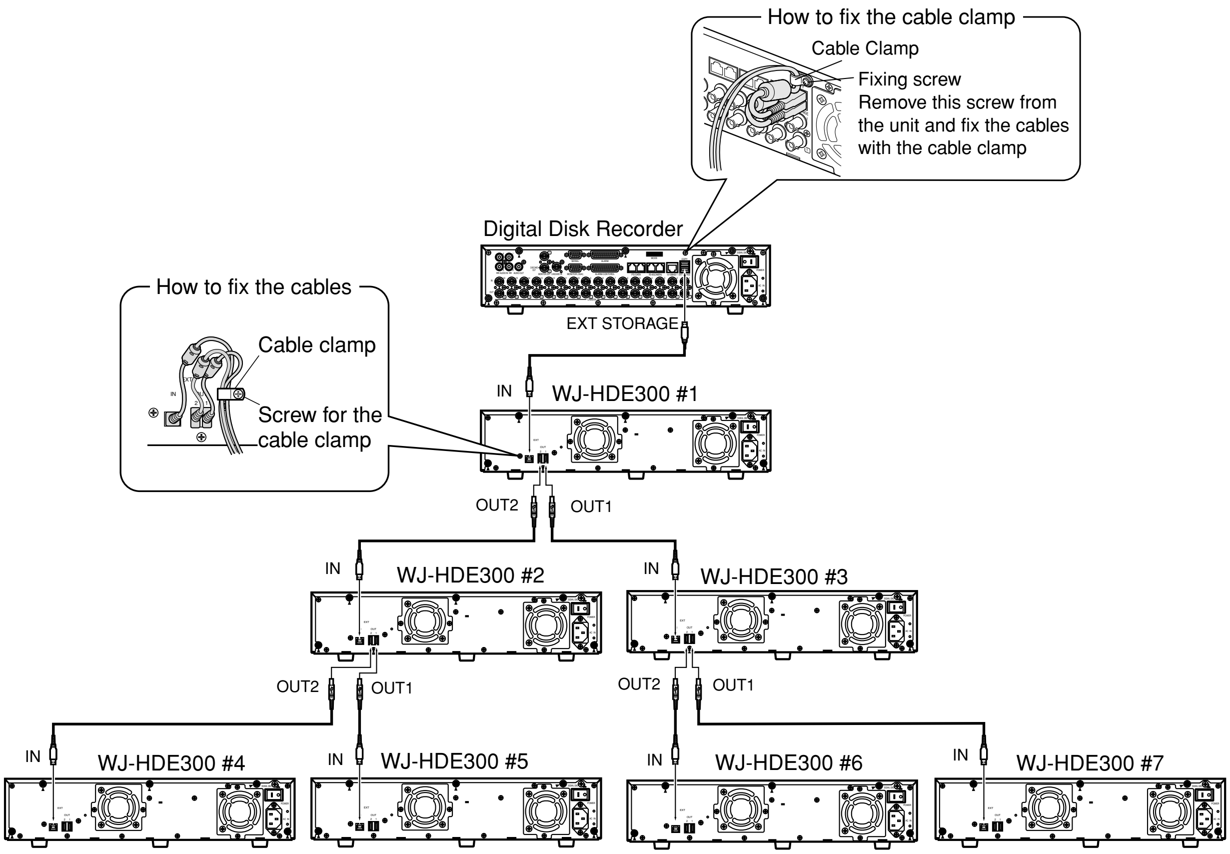
4. Confirm the cable layout after connections.

5. Secure the cables using the clamp (supplied) and fix it to the rear of the units.

Important

- Never use extension cables (locally procured). Be sure to use the supplied serial cables for connection.
- Physical connections determine the unit number in a system for each unit. Connect units with the recorder in numeric order as shown in the figure. For example, connect the sixth and seventh units to the third unit when five units have been already installed.
- Do not change connections after the system has run. Otherwise, the recorder will no longer recognize the extension units as before. You can change connections only when you can discard all existing data stored in the units.
- If turning off the power of a unit, none of the connected following units will work because of interrupted data transmission.

Note: When the system is connected in a different way from the figure, a unit number check can be performed on the HDD SAFETY MODE of the digital disk recorder. Refer to Setup Procedures.

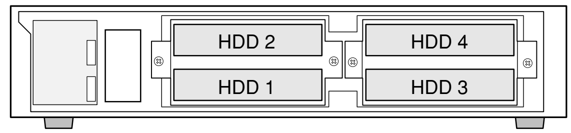


■ Setup Procedures

The following pages describe procedures on how to set up or change the disk mode, how to recover data in RAID5, or how to check the unit number using the HDD SAFETY MODE.

Notes:

- Refer to the operating instructions of the digital disk recorder WJ-HD316A/WJ-HD309A series for setup menu operations.
- The MODE switches of all units in a system should be set to the same position, SINGLE or RAID5.
- The HDDs should be installed in the proper positions in the order as shown in the figure. Do not skip or reverse the order of the HDD positions. Otherwise, the recorder will not recognize the extension unit.



- Do not change HDD positions of the extension unit after once the system has been operated. Otherwise, it will be impossible to read the recorded data.
- The power-on order should be the extension units first and then the recorder. The power-off order should be the recorder first and then the units.
- At least, three hard disk drives per extension unit are needed to run it in the RAID5 mode.

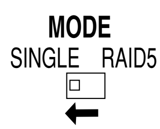
● Basic Setups

Setup to the SINGLE mode

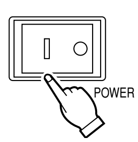
Perform the following to set up the unit to the SINGLE mode for the first time.

1 Power OFF
Confirm that the power of the recorder and the extension units are turned off.

2 SINGLE
Set the MODE switch inside the front lid of the extension unit to SINGLE.



3 Turn on the power switch of the extension units.



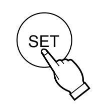
4 Turn on the power switch of the recorder.
→ The recorder will start.

5 HDD SAFETY MODE OFF
"HDD SAFETY MODE" menu will open after completing the system check. Select OFF on the menu and press the SET button on the recorder's front panel.
→ The recorder will restart.

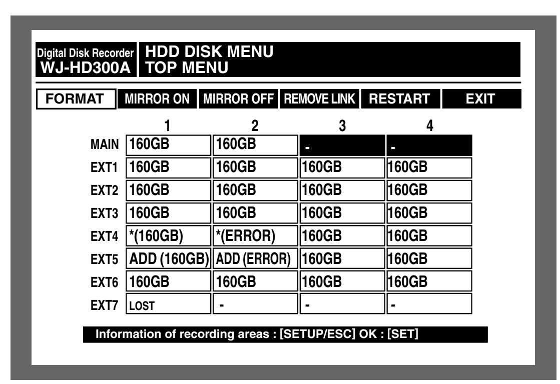
Notes:

- It will take about 3 or 5 minutes to complete the system check.
- If "ON" is selected on the menu of the main unit, "HDD SAFETY MODE" will appear. If "ON" is not selected, "HDD SAFETY MODE" will not appear. Skip the step 5 and proceed to the step 6.





6 HDD DISK MENU will appear when the system check is completed.
Perform formatting on the menu.
Refer to "■ Formatting the Hard Disk" of the operating instructions of the recorder.



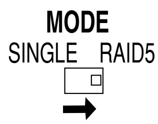
	1	2	3	4
MAIN	160GB	160GB	-	-
EXT1	160GB	160GB	160GB	160GB
EXT2	160GB	160GB	160GB	160GB
EXT3	160GB	160GB	160GB	160GB
EXT4	*(160GB)	*(ERROR)	160GB	160GB
EXT5	ADD (160GB)	ADD (ERROR)	160GB	160GB
EXT6	160GB	160GB	160GB	160GB
EXT7	LOST	-	-	-

Setup to the RAID5 mode

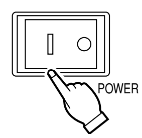
Perform the following to set up the unit to the RAID5 mode for the first time.

1 Power OFF
Confirm that the power of the recorder and the extension units are turned off.

2 RAID5
Set the MODE switch inside the front lid of the extension unit to RAID5.



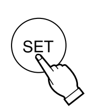
3 Turn on the power switch of the extension units.



4 Turn on the power switch of the recorder.
→ The recorder will start.

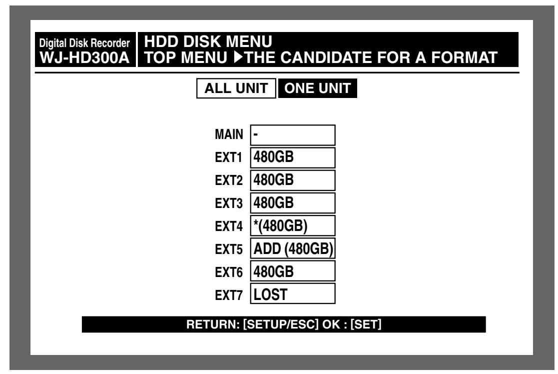
5 HDD SAFETY MODE OFF
"HDD SAFETY MODE" menu will open after completing the system check. Select OFF on the menu and press the SET button on the recorder’s front panel.
→ The recorder will restart.





Notes:
- It will take about 3 or 5 minutes to complete the system check.
- If "ON" is selected on the menu of the main unit, "HDD SAFETY MODE" will appear. If "ON" is not selected, "HDD SAFETY MODE" will not appear. Skip the step 5 and proceed to the step 6.

6 HDD DISK MENU will appear when the system check is completed.
Perform formatting on the menu.
Refer to "■ Formatting the Hard Disk" of the operating instructions of the recorder.



Formatting (Initialization) the hard disk

It is necessary to initialize the hard disk in the following cases.

When replacing or adding the hard disk
When operating the unit for the first time
When having changed the hard disk mode between SINGLE and RAID5

Note: It is unnecessary to initialize the hard disk when recovery is to be executed in the RAID5 mode.

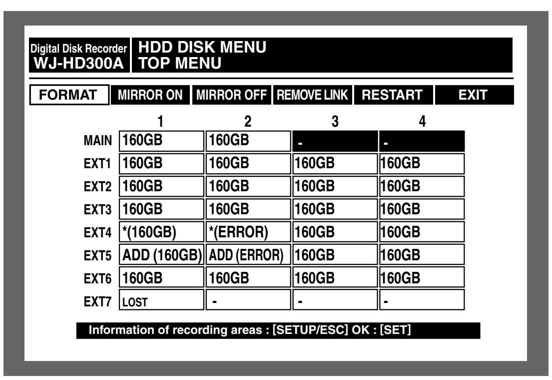
Important:
When the hard disk is formatted (initialized), all of the recorded images will be deleted.

1 Power up

- Turn on the power switches of the extension units first. Then turn on the power switch of the digital disk recorder.
  Note: When the hard disk is replaced or removed, the "TOP MENU" of the "HDD DISK MENU" will be automatically displayed.
- Press the SET button on the front panel of the recorder when a message " System check is completed" is displayed.



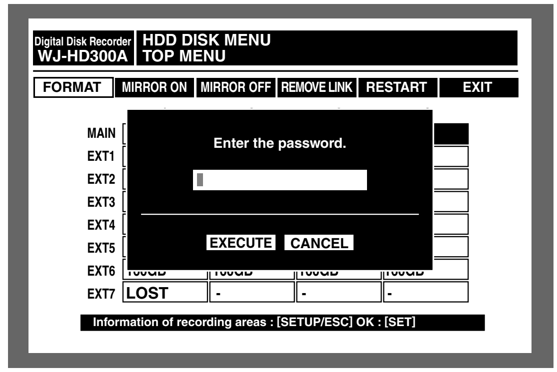
→ The "TOP MENU" of the "HDD DISK MENU" will be displayed.



2 Move the cursor to "FORMAT" and press the SET button.



→ The password entry window will be displayed.



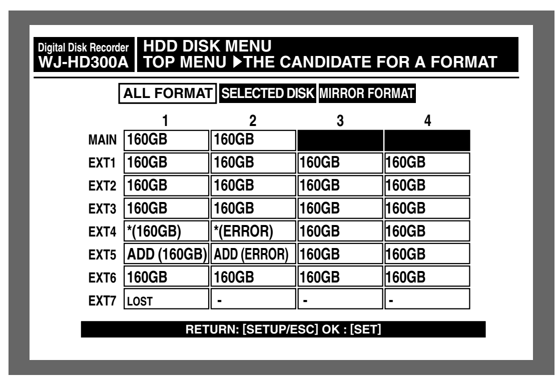
3 Password entry

- Enter the password for an administrator by rotating the jog dial. Camera selection buttons are available to enter numbers for password.
- Move the cursor to "EXECUTE" and press the SET button.

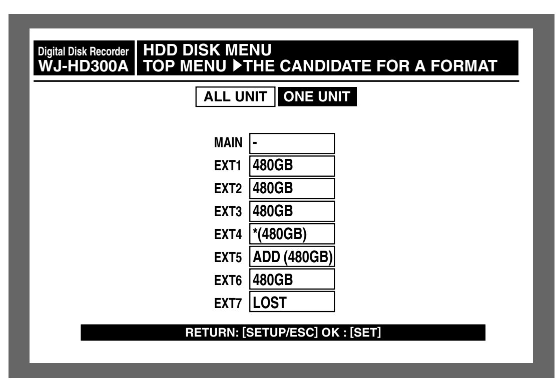
4 Mode selection

● **Initializing all hard disk (unit)**

- Select "ALL FORMAT" for the SINGLE mode or "ALL UNIT" for the RAID5 mode and press the SET button.
  → The "RECORDING AREA SETUP OF ALL DISKS" will be displayed.



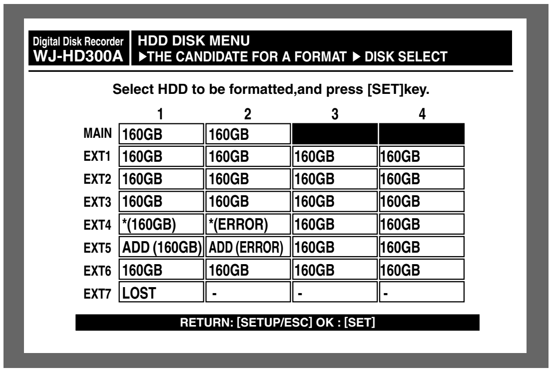
SINGLE mode



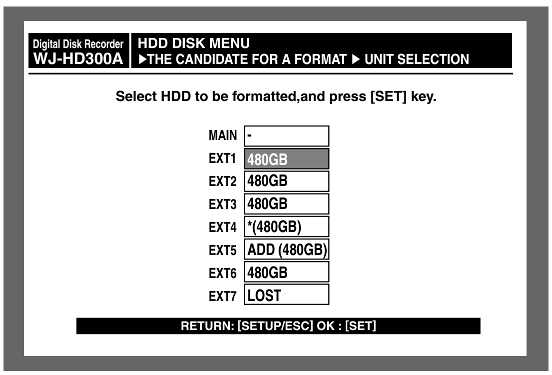
RAID5 mode

● **Initializing selected hard disk (the selected unit when using the RAID5 mode)**

- Select "SELECTED DISK" for the SINGLE mode or "ONE UNIT" for the RAID5 mode and press the SET button.
  → The "DISK SELECT" menu for the SINGLE mode or the "UNIT SELECTION" menu for the RAID5 mode will be displayed.

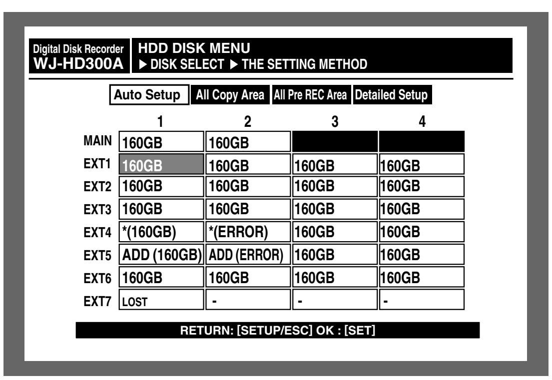


SINGLE mode

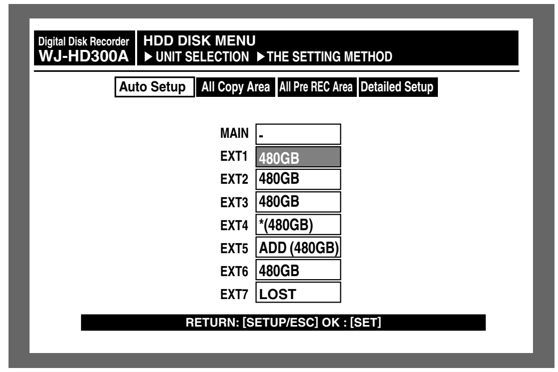


RAID5 mode

- Select the desired hard disk (or unit) and press the SET button.
  → The "SETTING METHOD" menu will be displayed.

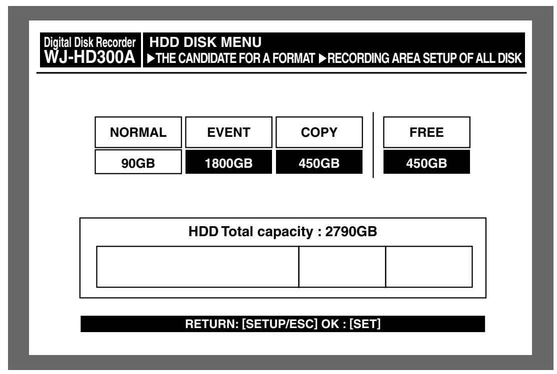


SINGLE mode

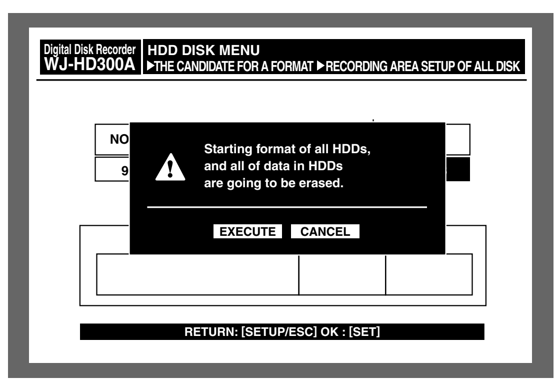


RAID5 mode

- Select a setting method by moving the cursor and press the SET button.
  → The confirmation menu of the recording area will be displayed.



5 Area selection
- Select the desired recording area to be initialized by moving the cursor and specify the capacity by rotating the jog dial. Repeat this to assign two or more areas.
- Confirm the capacities of the set recording areas and press the SET button.
  → The confirmation dialog window will be displayed.

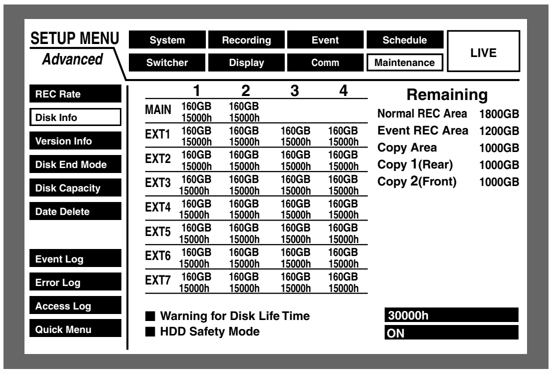


6 Execute
- Select "EXECUTE" and press the SET button.
  → The window will return to the TOP after completing the formatting.

● Replacement & Setup in the SINGLE mode

When the drive has become faulty in the SINGLE mode, perform replacement and setup as shown below.

1 SAFETY MODE ON
Select ON for HDD Safety Mode on the SETUP MENU and press the SET button.





→ The recorder will restart and the HDD SAFETY MODE window will be displayed.



2 Replacement of faulty HDD
- Confirm that the HDD POWER indicator on the front panel of the extension unit has gone out.
- Replace the faulty hard disk referring to ■ Replacing/Mounting HDD.
- Go to the next step below after finishing the connection of the front cover harness with the unit while the switches and buttons remain operable (step 11 of ■ Replacing/Mounting HDD).

3 Press the RESET button.



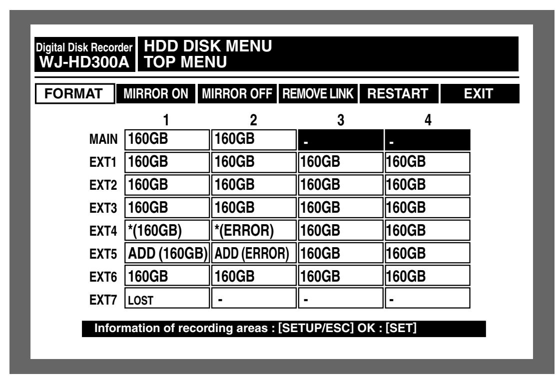
4 SAFETY MODE OFF
- Select OFF on the HDD SAFETY MODE menu and press the SET button.





→ HDD DISK MENU will appear when the system check is completed.

5 Perform formatting for the new drive using the menu.
Refer to "■ Formatting the Hard Disk" of the operating instructions of the recorder.



● Changing Setups

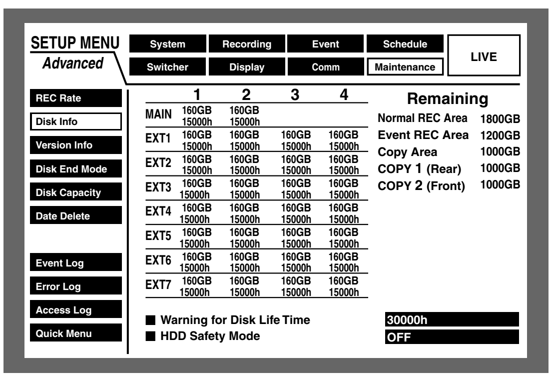
Changing the total number of HDD in RAID5

Do the following when the total number of the hard disks in the extension unit is increased (3 to 4) or reduced (4 to 3) after the system has been operated.

Important:

- The MODE switches of all extension units in a system should be set to the same position, SINGLE or RAID5. Otherwise, the system will malfunction.
- At least three hard disk drives per extension unit are needed to run it in the RAID5 mode.
- When the total number of the hard disks in an extension unit is increased or reduced, all data previously stored in the unit will be erased.

1 SAFETY MODE ON
Select ON for "HDD Safety Mode" and close the SETUP MENU.



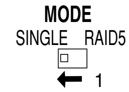
→ The recorder will restart and the HDD SAFETY MODE window will be displayed.



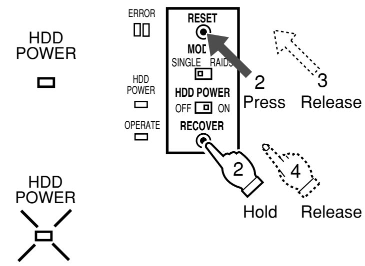
2 Install/uninstall the hard disk

- Confirm that the HDD POWER indicator on the front panel of the extension unit went out.
- Install or uninstall the hard disk referring to ■ Replacing/Mounting HDD.
- Go to the next step below after finishing the connection of the front cover harness with the unit while the switches and buttons remain operable (step 11 of ■ Replacing/Mounting HDD).

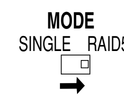
3 Initializing the unit



1 Set the MODE switch to SINGLE.
2 While holding down the RECOVER button, press the RESET button.
3 While holding down the RECOVER button, release the RESET button about 1 second later.
4 Release the RECOVER button after the HDD POWER indicator turns on (5 seconds later).
5 Repeat the above steps when initializing two or more units.



4 Set the MODE switch back to RAID5.

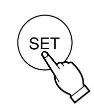


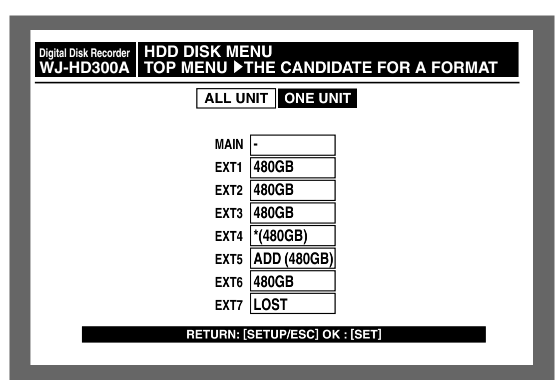
5 SAFETY MODE OFF

- Select OFF on the HDD SAFETY MODE window and press the SET button.



→ The recorder will restart and the HDD DISK MENU will be displayed after the system check is completed (3 - 5 minutes later).





- Perform the formatting of the changed extension unit.

Changing hard disk mode

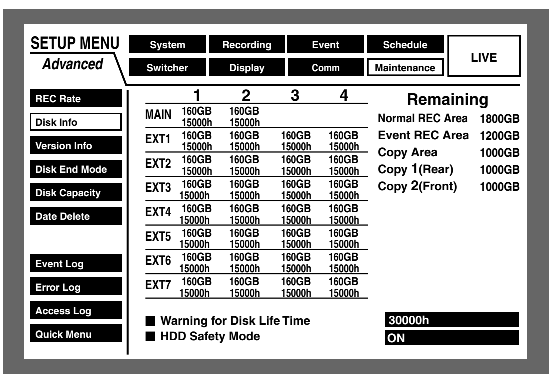
Do the following when the hard disk mode is changed from SINGLE to RAID5 or vice versa after the system has been operated.

Skip this section and perform settings in the same way as "Setup to the SINGLE mode" or "Setup to the RAID5 mode" when the power switches of the recorder and extension units are accessible.

Important:

- The MODE switches of all extension units in a system should be set to the same position, SINGLE or RAID5. Otherwise, the system will malfunction.
- At least, three hard disk drives per extension unit are needed to run it in the RAID5 mode.
- When the hard disk mode of the extension unit is changed, all data previously stored in the unit will be erased.

1 SAFETY MODE ON
Select ON for "HDD Safety Mode" and close the SETUP MENU.

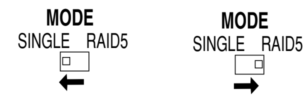


→ The recorder will restart and the HDD SAFETY MODE window will be displayed.



2 Change the mode

- Confirm that the HDD POWER indicator on the front panel of the extension unit went out.
- Change the MODE switch on the unit to SINGLE or RAID5. The default position is SINGLE.



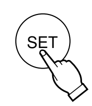
- Press the RESET button.



3 SAFETY MODE OFF

- Select OFF on the HDD SAFETY MODE menu and press the SET button.





→ The recorder will restart and the HDD DISK MENU will be displayed after the system check is completed (3 - 5 minutes).

- Perform the formatting of the changed extension unit.

● Recovery of RAID5 Disk

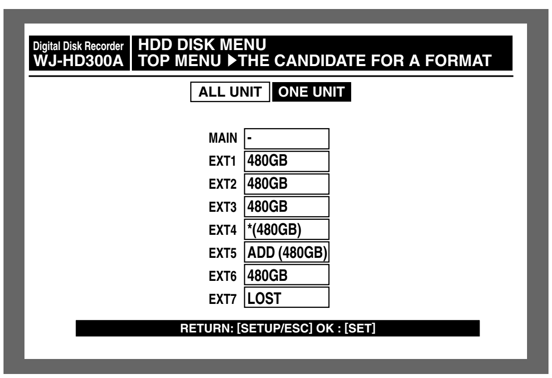
Replacing and recovering RAID5 disk

When an HDD access indicator on the front panel of the extension unit is lit red, it indicates that the hard disk drive malfunctions.
Do the following to replace and recover the faulty hard disk.

Important:

- Immediately replace the hard disk when an HDD access indicator is lit red. If one indicator is lit red and the other blinks red, or the second hard disk fails during the recovery process, it is impossible to recover the data as a RAID5 system.
- When the ERROR indicator is lit red, it is a system error. Consult your dealer. Refer to Troubleshooting.
- Refer to ■ Replacing/Mounting HDD for details on types, mounting positions, and number of hard disk drives that should be installed in the unit.

1 SAFETY MODE ON
Select ON for "HDD Safety Mode" and close the SETUP MENU.

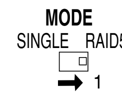


→ The recorder will restart and the HDD SAFETY MODE window will be displayed.



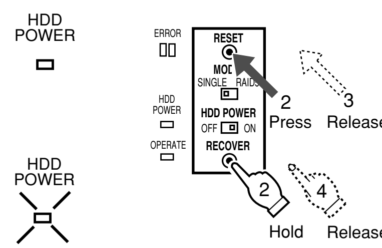
2 Replacement
- Confirm that the HDD POWER indicator on the front panel of the extension unit went out.
- Replace the faulty hard disk referring to ■ Replacing/Mounting HDD.
- Go to the next step below after finishing the connection of the front cover harness with the unit while the switches and buttons remain operable (step 11 of ■ Replacing/Mounting HDD).

3 Data Recovery
1 Confirm that the MODE switch is set to RAID5.



2 While holding down the RECOVER button, press the RESET button.
3 While holding down the RECOVER button, release the RESET button about 1 second later.
4 Release the RECOVER button after the HDD POWER indicator turns on (5 seconds later).

5 Repeat the above steps when initializing two or more units.



→ The HDD access indicator of the drive will blink red and orange alternately during the recovery process and will go out when the process is completed

Notes:

- For reference, it will take about 12 hours to complete the recovery process for 160 GB data.
- Do not operate any switch or button of the extension unit while the HDD indicator of the drive in the recovery process blinks red and orange alternately. Otherwise, the process will fail.
- The recorder can be operated during the data recovery process, though the recovery time will be lengthened.

4 HDD SAFETY MODE OFF

- Select OFF on the HDD SAFETY MODE window and press the SET button.





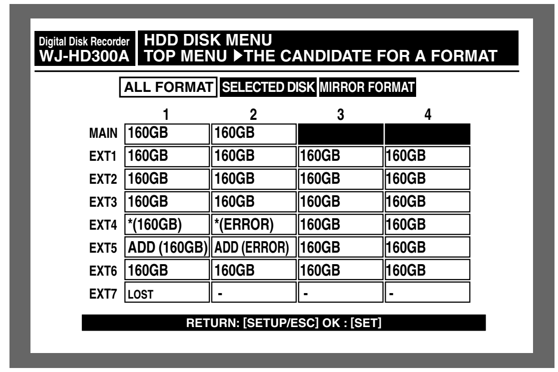
→ The recorder will restart and enter the system check mode. After 3 or 5 minutes, the system check complete window will be displayed.





- Press the SET button to display the HDD DISK MENU.

- Select EXIT and press the SET button to close the menu.



	1	2	3	4
MAIN	160GB	160GB		
EXT1	160GB	160GB	160GB	160GB
EXT2	160GB	160GB	160GB	160GB
EXT3	160GB	160GB	160GB	160GB
EXT4	*(160GB)	*(ERROR)	160GB	160GB
EXT5	ADD (160GB)	ADD (ERROR)	160GB	160GB
EXT6	160GB	160GB	160GB	160GB
EXT7	LOST	-	-	-

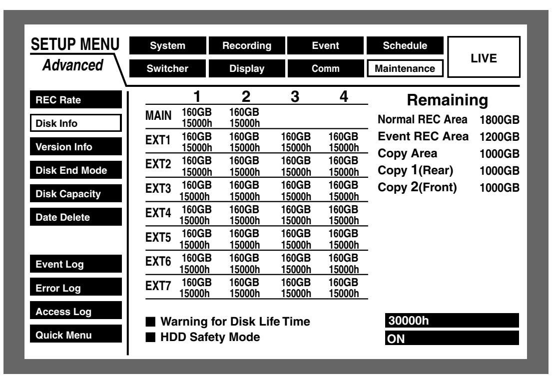
Setting/Changing hard disk mode after resetting error

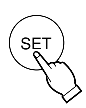
It is impossible to change or set up the hard disk mode when the ERROR indicator and one of HDD access indicators is lit red or is blinking. To set or change the mode, repair the system so the indicators go out.
Refer to Troubleshooting of this manual and the operating instructions of the digital disk recorder for details.

Important:

- When an HDD indicator is lit or blinking red, the HDD is faulty and should be replaced performing the following steps.
- When less than three hard disks are mounted or the mounted positions are wrong in RAID5, the HDD indicators will blink red and be lit red. Add hard disk(s) or correct the positions and then set up the extension unit again.
- When the ERROR indicator is lit red and all HDD access indicators are lit red and orange, it is a system error. Consult your dealer.

1 SAFETY MODE ON
Select ON for HDD Safety Mode on the SETUP MENU and press the SET button.





→ The recorder will restart and the HDD SAFETY MODE window will be displayed.

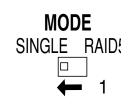


2 Replacement of faulty HDD

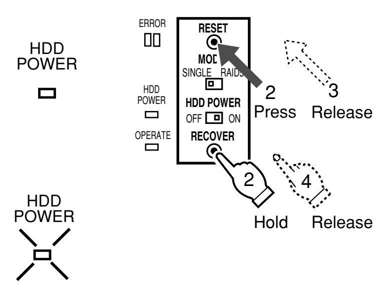
- Confirm that the HDD POWER indicator on the front panel of the extension unit has gone out.
- Replace the faulty hard disk referring to ■ Replacing/Mounting HDD.
- Go to the next step below after finishing the connection of the front cover harness with the unit while the switches and buttons remain operable (step 11 of ■ Replacing/Mounting HDD).

3 Initialization

1 Set the MODE switch to SINGLE.



2 While holding down the RECOVER button, press the RESET button.
3 While holding down the RECOVER button, release the RESET button about 1 second later.
4 Release the RECOVER button after the HDD POWER indicator turns on.



4 MODE switch setting
Set the MODE switch to SINGLE or RAID5.

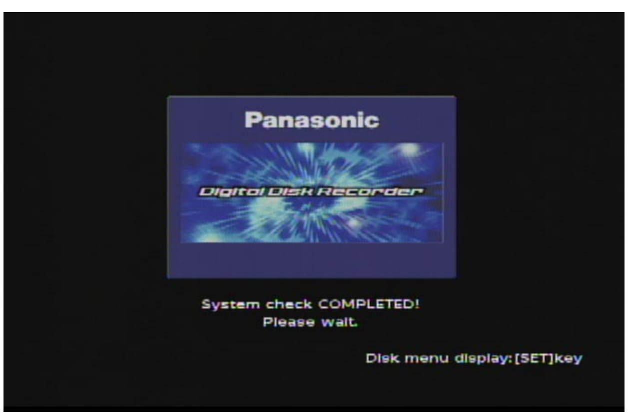


5 SAFETY MODE OFF
- Select OFF and press the SET button.

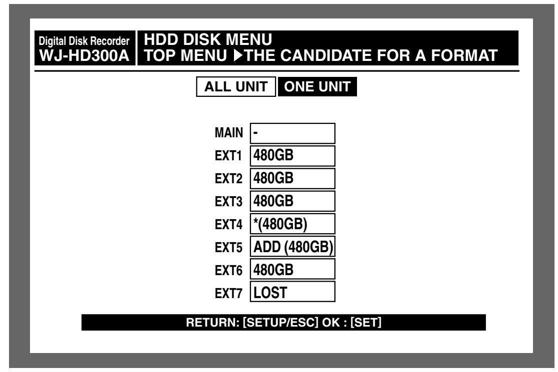




→ The recorder will restart. After 3 or 5 minutes, the system check complete window will be displayed.



→ After that, the HDD DISK MENU respective to the selected mode (SINGLE or RAID5) will be displayed automatically.



- Perform formatting referring to ■ Formatting (Initialization) the Hard Disk of the operating instructions of the recorder.

● Unit Number Check

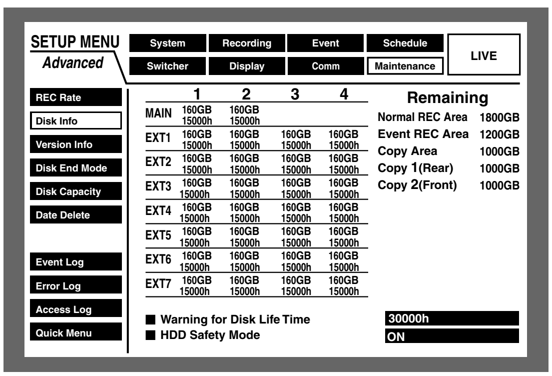
How to check the unit number

Each extension unit is given a unit number depending on the connected position. Refer to ■ Connections of this manual for the recommended connection form and the unit numbers given to the respective extension units.
Do the following to check which unit numbers are given to the extension units.

Important

- Do not change the connections of the extension units after the system has been operated. Otherwise, the recorder will fail to recognize the extension units.

1 SAFETY MODE ON
Select ON for HD Safety Mode and press the SET button.



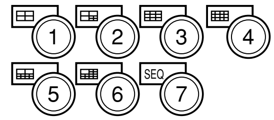


→ The recorder will restart and the HDD SAFETY MODE window will be displayed.

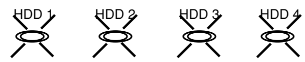


2 Unit number check

- Confirm that the HDD POWER indicators on the front panel of the extension units have gone out.
- On the front panel of the recorder, press the Camera Selection buttons from [1] to [7] in order.

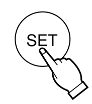


→ All the HDD access indicators of the respective unit will be lit red for 5 seconds. For example, when the button [1] is pressed, the HDD access indicators on the extension unit #1 will be lit.



3 SAFETY MODE OFF
Select OFF on the HDD SAFETY MODE window and press the SET button.

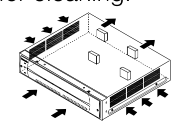




→ The recorder will restart. After 3 or 5 minutes of system check, it will run in normal operation mode.

Note: The HDD access indicator that is lit red or blinking due to failure of the hard disk in RAID5 will keep its state while the other indicators of the unit are lit red to display the unit number.

■ Troubleshooting

Symptom	Cause	What to do
No power is supplied.	Insufficient power cord connection POWER switch or HDD POWER switch is turned off.	Securely connect the power cord. Turn on the POWER switch and HDD POWER switch.
ERROR indicator lights orange. Thermal error has stopped the unit.	Cooling fan(s) may be faulty. Ambient temperature exceeds the operable range. Ventilation may be blocked.	Repair cooling fan(s). Arrange the ambient temperature so that it lies within the acceptable range. Remove obstacles blocking the openings or slots. See below for cleaning. 
ERROR indicator lights red.	System fault	Repair is required.
Extension unit or added HDD is not recognized.	Connection cables other than supplied may have been used. Insufficient connector junction Powering up the recorder and units in opposite order The recorder and units are connected to different AC mains HDD installation position is wrong. MODE switch setting	Use the supplied cable. Firmly join the cables and connectors. The order should be "the extension units first, then the recorder" or at the same time. Keep the above order for powering up, or rearrange the AC mains connection to the same source. Install HDDs in order from the position #1, #2, #3, and #4. Never skip or reverse the order. Set the MODE switch appropriately.
HDD access indicator alternately blinks orange and red or blinks green though no recording/playback.	In recovery process of RAID5 Automatic periodic (every 5 seconds) data check in RAID5	Not a problem
Data recovery fails after replacing the HDDs in the RAID 5 mode.	The HDD to be recovered may be faulty. Size of the new HDD may be smaller than before although nominally the same. The HDDs have not been replaced correctly. The cables are not connected correctly to the HDDs.	Repair the faulty HDD. Install an HDD larger than before or the same size. Never skip or reverse the position. Check that the cables are connected to the HDDs correctly and firmly.
HDD access indicators light and blink red.	Disk drive is faulty in RAID5 mode. The steady light means it is the first faulty drive, the blinking light means it is one of the later ones.	Repair the faulty HDD and implement the recovery process.
HDD access indicators light red and orange.	System fault Red and orange lighting of these four bits displays error status as shown below. ●: Red ○: Orange ○●●●: Hardware error ●○●●: Hardware error ○○●●: Hardware error ●●○●: Hardware error ○●○●: Hardware error ●○○●: Hardware error ○○○●: Hardware error ●●●○: Hardware error ●○●○: Hardware error ○○●○: Hardware error ●●○○: Hardware error ●○○○: Disk CRC error	Repair is required.

■ Specifications

Required power:	220 V AC - 240 V AC 50 Hz
Power consumption:	85 W (including 4 HDDs when installed)
Interface:	2-wire serial, 480 Mbps logical speed
Operating temperature:	+5 °C to +45 °C (41 °F to 113 °F)
Operating humidity:	Less than 85 %
Dimensions:	420 mm (W) x 88 mm (H) x 350 mm (D), rubber feet exclusive 19-9/16" (W) x 3-7/16" (H) x 13-13/16" (D)
Weight:	7.2 kg (16 lbs) (not including hard disk drives)

Weight and dimensions indicated are approximate.
Specifications are subject to change without notice.

■ Accessories

Operating instructions (this document)....................... 1 pc.

The following are for installation.

Power cord .... 1 pc.
Serial cable .... 1 pc.
Rack mounting bracket .... 2 pcs.
Bracket fixing screw .... 4 pcs.
HDD fixing screw .... 16 pcs.
Damper .... 16 pcs.
Sleeve .... 16 pcs.

[English]

Declaration of Conformity with the requirements of Technical Regulation on the Restriction Of the use of certain Hazardous Substances in Electrical and Electronic Equipment (adopted by Order No.1057 of Cabinet of Ministers of Ukraine)

The Product is in conformity with the requirements of Technical Regulation on the Restriction Of the use of certain Hazardous Substances in electrical and electronic equipment (TR on RoHS).

The content of hazardous substance with the exemption of the applications listed in the Annex No.2 of TR on RoHS:

1. Lead (Pb) – not over 0,1wt % or 1000wt ppm;
2. Cadmium (Cd) – not over 0,01wt % or 100wt ppm;
3. Mercury (Hg) – not over 0,1wt % or 1000wt ppm;
4. Hexavalent chromium (Cr^{6+}) – not over 0,1wt % or 1000wt ppm;
5. Polybrominated biphenyls (PBBs) – not over 0,1wt % or 1000wt ppm;
6. Polybrominated diphenyl ethers (PBDEs) – not over 0,1wt % or 1000wt ppm.

[Русский язык]

Декларация о Соответствии Требованиям Технического Регламента об Ограничении Использования некоторых Вредных Веществ в электрическом и электронном оборудовании (утверждённого Постановлением №1057 Кабинета Министров Украины)

Изделие соответствует требованиям Технического Регламента об Ограничении Использования некоторых Вредных Веществ в электрическом и электронном оборудовании (ТР ОИВВ).

Содержание вредных веществ в случаях, не предусмотренных Дополнением №2 ТР ОИВВ:

1. свинец (Pb) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
2. кадмий (Cd) – не превышает 0,01 % веса вещества или в концентрации до 100 миллионных частей;
3. ртуть (Hg) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
4. шестивалентный хром (Cr^{6+}) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
5. полибромбифенолы (PBB) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей;
6. полибромдифеноловые эфиры (PBDE) – не превышает 0,1 % веса вещества или в концентрации до 1000 миллионных частей.

[Українська мова]

Декларація про Відповідність Вимогам Технічного Регламенту Обмеження Використання деяких Небезпечних Речовин в електричному та електронному обладнанні (затвердженого Постановою №1057 Кабінету Міністрів України)

Виріб відповідає вимогам Технічного Регламенту Обмеження Використання деяких Небезпечних Речовин в електричному та електронному обладнанні (ТР ОВНР).

Вміст небезпечних речовин у випадках, не обумовлених в Додатку №2 ТР ОВНР, :

1. свинець(Pb) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
2. кадмій (Cd) – не перевищує 0,01 % ваги речовини або в концентрації до 100 частин на мільйон;
3. ртуть(Hg) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
4. шестивалентний хром (Cr^{6+}) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
5. полібромбіфеноли (PBB) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон;
6. полібромдефенілові ефіри (PBDE) – не перевищує 0,1 % ваги речовини або в концентрації до 1000 частин на мільйон.

Panasonic Corporation
http://panasonic.net

Importer's name and address to follow EU rules:

Panasonic Testing Centre
Panasonic Marketing Europe GmbH
Winsbergring 15, 22525 Hamburg F.R.Germany

Nd0611-0 3TR001884HDA Printed in China